

**Amendments to the Claims**

This listing of claims will replace all prior versions and listings of claims in the application.

**Listing of Claims**

1. (Currently Amended) Device for detecting thermal conductivity of a sample by application of optical pulse techniques, comprising
  - a furnace for heating the sample to a predetermined temperature,
  - a source of radiation for emitting high-energy radiation in the form of pulses onto said sample for heating the sample,
  - an infrared sensor for detecting time history of infrared radiation emitted by said sample,
  - a decoupler element for decoupling a reference radiation from a beam emitted by said source of radiation,
  - a second sensor for measuring said reference radiation, as well as
  - an analyzer unit for detecting the thermal conductivity of the sample by analyzing signals of said infrared sensor,
  - said second sensor for measuring said reference radiation having a bandwidth that is substantially wider than a reciprocal value of pulse length of said source of radiation,
  - said analyzer unit being so designed that it detects the thermal conductivity by deriving it from the signals of said infrared sensor, which are corrected by performing a convolution with the measuring signals of said second sensor by approximating a laser pulse by sections in at least two sections by means of exponential functions, and
  - said analyzer unit being designed for detecting a time difference between a rated zero point in time and a starting point of the approximated ~~optical laser~~ pulse.

2. (Original) Device according to Claim 1,  
characterized in that  
said analyzer unit is designed for approximating a high-speed rising edge of the laser pulse by the formula

$$I_1(t) = A \cdot [1 - \exp\{-(t - Delay)/\tau_1\}]$$

## 3. (Original) Device according to Claim 1,

characterized in that

said analyzer unit is designed for approximating a high-speed rising edge of the laser pulse by the formula

$$I_1(t) = A \cdot \left[ 1 - \frac{\tau_{12}}{\tau_{12} - \tau_{11}} \cdot \exp\{-(t - \text{Delay})/\tau_{12}\} + \frac{\tau_{11}}{\tau_{12} - \tau_{11}} \cdot \exp\{-(t - \text{Delay})/\tau_{11}\} \right]$$

## 4. (Currently Amended) Device according to Claim 13,

characterized in that

said analyzer unit is designed for approximating a ~~high-speed rising edge~~ slightly downward sloping plateau of the laser pulse by the formula

$$I_2(t) = I_1(t) \cdot \exp\{-(t - \text{Delay})/\tau_2\}$$

## 5. (Currently Amended) Device according to Claim 14,

characterized in that

said analyzer unit is designed for approximating a high-speed downward ramp of laser radiation after cut-off of pumping light, by the formula

$$I_3(t) = I_2(t = \text{Delay} + t_c) \cdot \exp\{-(t - \text{Delay} - t_c)/\tau_3\}$$

## 6. (Currently Amended) Device according to Claim 1,

characterized in that

said analyzer unit is designed for approximating a high-speed downward ramp of laser radiation after cut-off of pumping light, by the formula

$$I_3(t) = I_2(t = \text{Delay} + t_c) \cdot \left[ \frac{\tau_{32}}{\tau_{32} - \tau_{31}} \cdot \exp\{-(t - \text{Delay} - t_c)/\tau_{32}\} - \frac{\tau_{31}}{\tau_{32} - \tau_{31}} \cdot \exp\{-(t - \text{Delay} - t_c)/\tau_{31}\} \right]$$

## 7. (Original) Device according to Claim 1,

characterized in that

said analyzer unit is so designed that it takes approximations of an optical pulse as a basis for performing a convolution with model functions for heat transfer.

8. (Original) Device according to Claim 1,  
characterized in that  
said analyzer unit is designed for performing a convolution of an optical pulse by means of a  
model function for heat transfer with application of a Cowan approximation.
9. (Original) Device according to Claim 1,  
characterized in that  
said analyzer unit is designed for performing a convolution of an optical pulse by means of a  
model function for heat transfer for translucent materials.
10. (Original) Device according to Claim 1,  
characterized in that  
said analyzer unit is designed for performing a convolution of an optical pulse by means of a  
model function for heat transfer with application of a Cape-Lehmann solution.
11. (Currently Amended) Device according to Claim 1,  
characterized in that  
said analyzer unit is designed for performing a convolution of an optical pulse by means of a  
model function for heat transfer in multiple layers, ~~preferably double or triple layers.~~
12. (Original) Device according to Claim 1,  
characterized in that  
said analyzer unit is designed for performing a convolution of an optical pulse by means of a  
model function for heat transfer for multiple layers having thermal resistance.
13. (Canceled)